April 28, 1950.

Dr. Michael Doudoroff,
c/o Dr. Jacques Monod,
Institut Pasteur,
Paris, France

Dear Mike:

In addition to just wanting to say hello, I've run across a couple of things that I thought you and Jacques might be interested in. For a while last week, I had trouble showing that K-12 uses maltose adaptively (!). This has been somewhat cleared up: cells harvested from "YZ" with 1% glucose show very little activity on maltose, compared to glucose, but if only 0.1% glucose, or none at all, is used to grow the cells, they have considerable activity on maltose, from ca. 1/5 - 1/2 that on glucose. This is somewhat like the galactosidase picture: 5-10% of adapted activity in cells grown on various substrates other than glucose, but less than 1% if glucose is present. For a while, I thought the same might apply to galactose, but it turned out that my galactose prep. was contaminated withaa small amount of "glucose", and the constitutive activity disappeared when the galactose was recrystallized.

A second point: I've picked ap a K-12 mutant which produces galactosidase constitutively, in large amounts-- rather more even than K-12 grown on lactose. In fact, cells from a synthetic <u>glucose</u> medium are even more active than from a synthetic <u>lactose</u> medium. Since glucose blanks out the adaptive effect of exogenous lactose for K-12, I am inclined to think that the mutant represents more than an "auto-adaptation" to internally produced galactosides. The adaptive potentialities to all the other sugars so far tested are unaltered -- in fact it was while doing these controls that the item in the first paragraph was noticed.

Have you worked out a convenient method, as yet, for determining amylomaltase?

Just after repeating the experiment, I noticed a paper by Leloir et al in which the fermentation of glucose-1-phosphate by coli is mentioned. This might be some sort of fluke due to preliminary phosphatase action [at the "surface of the cells"-- like yeast ATPase], but it should be tried with W-327 to find the point of block in glucose fermentation. I'm holding off on it on the basis that you or your students are following this up.

Do you know when you will be returning to California?

Best regards to Rita, Jacques, and Lwoff., from Esther and myself.

Sincerely,

Joshua Lederberg